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A Metapopulation Framework for Explaining the Socio-Demographic and Geospatial Epidemiology of Gonorrhea and Other Sexually Transmitted Infections in Heterosexual Populations

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Background: Sexually transmitted infections (STIs) have different socio-demographic and geospatial profiles. Gonorrhea is concentrated in epidemiologically distinct subpopulations, but Chlamydia infections are more ubiquitous. Moreover, individual level factors (eg. number of new sex partners a year) are less influential than contextual factors (eg. age, ethnicity, residential area) in determining risk of infection. We propose a flexible modeling framework which explains these epidemiological features for gonorrhea in the United Kingdom (UK), and then use the same model to investigate Chlamydia transmission.

Methods: We modeled 1,00,000 men and women organized into 100 subpopulations. The key difference between subpopulations was the concentration of individuals with high sexual activity, which followed a Pareto-like distribution defined by a single parameter, f. A proportion of sexual partnerships (p) occurred exclusively within the same subpopulation, with the remainder occurring with available partnerships from outside the subpopulation. Gonorrhea and Chlamydia were depicted as susceptible-infected-susceptible deterministic models. Transition between compartments followed published estimates.

Results: When using parameters appropriate for gonorrhea, we found that $p = 0.7$ and $f = 0.4$ produced an incidence compatible with that for sexually active ages in the Greater London population (~200 cases per 100,000 population per year). Most subpopulations had an incidence lower than the general population, while subpopulations where self-sustaining transmission was possible had incidence rates which were ten-fold higher. We kept $p = 0.7$ and $f = 0.4$ while modifying other parameters to depict Chlamydia; the model produced appropriate incidence rates (~400 per 100,000). The modeled Gini coefficient, which measures how much the distribution of cases deviates from equality, was 0.47 for gonorrhea and 0.26 for Chlamydia, which correlated well with previous UK-based estimates for these infections (0.49 and 0.26 respectively).

Conclusion: The metapopulation framework explains how contextual and individual level factors interact to produce the observed epidemiology of STIs.

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Genital Tuberculosis-A Silent Infection in Infertile Indian Population

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Background: Genital tuberculosis is reported to be a major factor causing infertility in Indian women and often exists without any apparent signs and symptoms.

Aim: To study the effect of tuberculosis, a common infectious disease in the Indian subcontinent, its subsequent effect on female fertility.

To assess the clinical presentation of genital tuberculosis and to study various modes of diagnosis.

Method: Study was done between Jan 2005- Dec 2006 on 250 infertile women at an infertility care and assisted reproductive unit in Central India, in whom there was clinical suspicion of genital tuberculosis. All underwent diagnostic laparoscopy and biopsy for confirmation and other causes of infertility were excluded. Utility of various laboratory parameters AFB smear, AFB culture and PCR to diagnose genital tuberculosis were assessed. Laparoscopic findings were correlated with laboratory results.

Result: The prevalence of genital TB was higher than one might imagine. Among the 170 infertile women affected with genital tuberculosis there were cases of primary ($n = 149$) and secondary ($n = 21$) infertility The diagnosis of endometrial tuberculosis was confirmed by AFB smear 52, AFB culture 6, PCR112.

Treatment with anti-tubercular drug therapy resulted in increased conception rate.

Laparoscopy examination is a valuable procedure for the etiological diagnosis of tubal infertility and correspond with positive PCR 88%, AFB smear 72% and AFB culture in 98%.

Conclusion: It is essential for a gynaecologist working in developing countries to anticipate possibility of genital tuberculosis in infertile patients. This study highlights the fact that tuberculosis, a chronic infectious disease, is one of the major etiologic factors of female infertility, especially on the Indian subcontinent.

Female genital tuberculosis is a symptom-less disease inadvertently uncovered during investigation for infertility. Clinicians need to be aware of the existence of this important cause of infertility in women, in view of the current upsurge in tuberculosis worldwide.

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Access to Sexually Transmitted Infections Services in Rural South Africa: An Evaluation of the Implementation of the National Treatment Guidelines

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Treatment of sexually transmitted infections (STI) is a major public health priority for South Africa. In 1996, the Department of Health adopted the syndromic case management to improve STI treatment by establishing the National